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TRANSLATION ATTACHED

(54) DIE-BONDING SHEET
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(71) NITTO DENKO CORP (72) YUZO AKATA
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PURPOSE: To provide a thermosetting die-bonding sheet which has an adhesive layer excellent in uniformity in thickness and shape, has strengths sufficient for handling, can be fixed to an electrode member at a temp. as low as normal temp., can avoid degradation in quality due to proceeding to the B-stage by thermal treatment, is free from problems with the transfer of adhesive layer or adhesion between electrode members even when the electrode members having the adhesive layers fixed are stacked and stored at normal temp., can fix a semiconductor chip without the necessity for high temp. and high pressure, and exhibits heat resistance enough to withstand wire bonding connection.

CONSTITUTION: A die-bonding sheet which is prepd. by temporarily adhering a thermosetting adhesive layer sticky at 60°C or lower to a film which comprises a polymer alloy consisting of a thermoplastic resin having a glass transition point of at least 80°C and a thermosetting resin and is substantially nontacky at 60°C or lower.

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特開平5－25439

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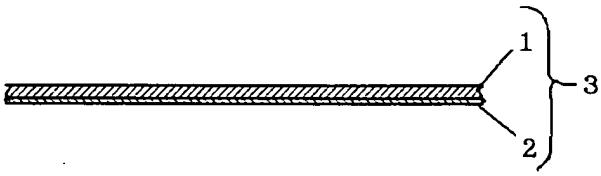
(54)【発明の名称】　ダイボンド用シート

(57)【要約】

【目的】　厚さや形状等の均一性に優れる接着剤層を付与できるシート方式を満足させつつ、取扱に支障のない強度を有し、常温等の低温で電極部材に固定できて加熱処理によるＢステージ化の進行等で品質が劣化することを回避でき、接着剤層の固定状態下に電極部材を積み重ねて常温等で保管しても移着問題や電極部材間での接着問題を生じず、しかも高温・高圧の必要なく半導体チップを固着処理できてワイヤーボンディング接続等に耐える耐熱性を示す、ダイボンド用の熱硬化型シートを得ること。

【構成】　ガラス転移点が８０℃以上の熱可塑性樹脂と熱硬化性樹脂を成分とするポリマーアロイ型接着剤からなると共に、６０℃以下の温度で実質的な粘着性を示さないフィルム（１）に、６０℃以下の温度で粘着性を示す熱硬化性接着剤からなる仮着型接着層（２）を設けてなるダイボンド用シート。



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【特許請求の範囲】

【請求項１】　ガラス転移点が８０℃以上の熱可塑性樹脂と熱硬化性樹脂を成分とするポリマーアロイ型接着剤からなると共に、６０℃以下の温度で実質的な粘着性を示さないフィルムに、６０℃以下の温度で粘着性を示す熱硬化性接着剤からなる仮着型接着層を設けたことを特徴とするダイボンド用シート。

【請求項２】　導電性を有してなる請求項１に記載のダイボンド用シート。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、半導体チップを電極部材に固着するためのダイボンド用シートに関する。

【０００２】

【従来の技術】従来、半導体装置の製造過程においてリードフレームやステム等の電極部材への半導体チップの固着には、銀ペースト等のペーストが用いられていた。固着処理は、リードフレームのダイパッド等の上にペーストを塗工し、それに半導体チップを搭載してペースト層を硬化させることにより行われる。

【０００３】しかしながら、ペーストの粘度変動や劣化等で塗工量や塗工形状等のバラツキが大きく、形成されるペースト厚が不均一で半導体チップの固着強度の信頼性に乏しい問題点があつた。すなわち、ペーストの塗工不足で半導体チップと電極部材との固着強度が低いと後続のワイヤーボンディング工程で半導体チップが剥離する問題を生じ、反対にペーストの塗工量が多すぎると半導体チップの上にまでペーストが流延して特性不良を発生し、歩留まりや信頼性を低下させ、かかる問題が半導体チップの大型化に伴って特に顕著なものとなっている。そのため、ペースト塗工量の制御を頻繁に行う必要があって作業性や生産性に支障する問題ともなっている。

【０００４】

【発明が解決しようとする課題】本発明は、接着シートによれば電極部材上に厚さ等の均一性に優れる接着剤層を付与できて上記の問題を克服できることに鑑み、その接着シート方式を満足させつつ、取扱に支障のない強度を有して常温等の低温で電極部材に固定できると共に、その固定状態で電極部材を積み重ねて常温等で保管しても移着したり、電極部材間で接着したりせず、しかも高温・高圧を要することなく半導体チップを固着処理できて、後続のワイヤーボンディング接続や樹脂モールド封止等の処理に耐える耐熱性を有するダイボンド用の接着シートの開発を課題とする。

【０００５】

【課題を解決するための手段】本発明は、ガラス転移点が８０℃以上の熱可塑性樹脂と熱硬化性樹脂を成分とするポリマーアロイ型接着剤からなると共に、６０℃以下の温度で実質的な粘着性を示さないフィルムに、６０℃以下の温度で粘着性を示す熱硬化性接着剤からなる仮着型接着層を設けたことを特徴とするダイボンド用シートを提供するものである。

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【０００６】

【作用】上記の構成により、厚さや形状等の均一性に優れる接着シート方式を満足させつつ、ワイヤーボンディング接続や樹脂モールド封止等の処理に耐える耐熱性を有して取扱に支障のない強度を有する熱硬化型の接着シートとすることができる。しかも仮着型接着層により常温等の低温で電極部材に固定できて、加熱処理によるＢステージ化の進行等で品質制御が困難化することを回避でき、固定状態下に電極部材を積み重ねて常温等で保管しても移着問題や電極部材間での接着問題を発生せず、しかも高温・高圧を要することなく半導体チップを固着できてダイボンド処理を達成することができる。

【０００７】

【実施例】本発明のダイボンド用シートを図１に例示した。１がベースとなるフィルム（ポリマーアロイ型接着剤）、２が仮着型接着層である。図１では長尺体を示したが、リードフレームやステム等の電極部材に適用するに際しては、例えば例示の長尺体を切断するなどして半導体チップに対応した所定の寸法ないし形状に成形される。

【０００８】ベースとなるフィルムは、ガラス転移点が８０℃以上の熱可塑性樹脂と熱硬化性樹脂を成分とするポリマーアロイ型接着剤を用いて、６０℃以下の温度では実質的な粘着性を示さないように形成される。フィルム厚は１～１００μmが一般的であるが、これに限定されない。

【０００９】前記のポリマーアロイ型接着剤の調製に用いられる、ガラス転移点が８０℃以上の熱可塑性樹脂としては、例えばポリイミド系樹脂、ポリスルホン系樹脂、ポリエーテルスルホン系樹脂、フェノキシ系樹脂、ポリアミド系樹脂、アクリル系樹脂などがあげられる。

【００１０】一方、熱硬化性樹脂としては、例えばエポキシ系樹脂、フェノール系樹脂、マレイミド系樹脂、シリコーン系樹脂などがあげられる。熱硬化性樹脂の配合割合は、要求される耐熱性や強度などに応じて適宜に決定されるが、一般には熱可塑性樹脂１００重量部あたり、１０～５００重量部とされる。

【００１１】本発明のダイボンド用シートは、前記したベースとなるフィルム（１）に、６０℃以下の温度で粘着性を示す熱硬化性接着剤からなる仮着型接着層（２）を設けたものである。仮着型接着層の厚さは１～１００μmが一般的であるが、これに限定されない。

【００１２】仮着型接着層の形成は例えば、エポキシ系樹脂、フェノール系樹脂、ポリイミド系樹脂、マレイミド系樹脂、シリコーン系樹脂の如き熱硬化性樹脂をＢステージ状態とする方式、熱硬化性樹脂にカルボキシル基やヒドロキシル基の如き架橋用官能基を導入した粘着性

物質と、必要に応じて架橋剤を配合した粘着性接着剤を用いる方式などにより行うことができる。

【0013】前記の粘着性物質としては例えば、NBRやアクリル系ポリマーの如き粘着剤形成用ポリマー、ロジン系樹脂やテルペン系樹脂の如き粘着性付与樹脂などがあげられる。なお、粘着性接着剤を用いる方式においても必要に応じてBステージ状態に半硬化される。

【0014】本発明のダイボンド用シートにおいては、ベースとなるフィルム又は／及び仮着型接着層の中に、例えばアルミニウム、銅、銀、金、パラジウム、カーボンの如き導電性物質からなる粉末を含有させて、導電性を付与したり、熱伝導性を高めてもよい。熱伝導性の向上は、例えばアルミナ、シリカ、窒化ケイ素などの粉末を含有させることによっても行うことができる。

【0015】本発明のダイボンド用シートを用いての半導体チップの固着処理は、例えば次のようにして行うことができる。すなわち、ダイボンド用シートをリール等に長尺の状態で巻回したリボンとして供給しつつ、それを適宜なカッターを介して順次所定の寸法（長さや形状等）に切断する。これにより、その切断片を介して厚さや量の一定性に優れる接着剤層を形成することができる。

【0016】次に、形成された切断片は電極部材、例えばリードフレームのダイパッド上に仮着型接着層（2）を介して仮接着され、その上に半導体チップを載せてポリマーアロイ型接着剤における熱可塑性樹脂の軟化点以上の温度に加熱し、切断片の溶融下に接着させる。加熱処理は、例えばヒーター、超音波、紫外線などの適宜な方式で行ってよい。なお、前記の溶着を達成した切断片は、加熱処理による熱硬化性樹脂の硬化と、その後の冷却による熱可塑性樹脂の固化を介して半導体チップを電極部材に固着する。

【0017】図2にリードフレーム上に半導体チップを固着したものを例示した。3がダイボンド用シートないしその切断片、4がリードフレーム、5がダイパッド、6が半導体チップである。なお電極部材に固着された半導体チップ（6）は必要に応じて、ワイヤボンディング処理や樹脂モールド等の後続工程に供給される。

【0018】実施例1

ポリエーテルイミド／ビスフェノールA型エポキシ樹脂（エポキシ当量185）／ノボラック型フェノール樹脂（軟化点75℃）／2－メチルイミダゾールを、100／50／30／0.5の重量比で配合してなるジメチルアセトアミド溶液を、ポリエステルフィルムからなるセパレータの上に塗布し、130℃で10分間、0.5mmHgの減圧下に加熱して厚さ20μmのベースフィルム層を形成した。

【0019】他方、カルボキシル変性NBR／ビスフェノールA型エポキシ樹脂（エポキシ当量450）／ノボラック型フェノール樹脂（軟化点75℃）／2－メチルイミダゾールを、100／60／30／1の重量比で配合したメチルエチルケトン溶液を、剥離剤で処理したポリエステルフィルムからなるセパレータの上に塗布し、100℃で10分間加熱して厚さ10μmの仮着型接着層を形成した。

【0020】次に、前記で得た両部材をそのベースフィルム層と仮着型接着層を介して圧着し、形成されたラミネート体より両側のセパレータを剥離除去してダイボンド用シートを得た。

【0021】実施例2

ポリエーテルイミドに代えてポリエーテルスルホンを用いたほかは実施例1に準じ、ベースフィルム層を形成してそれを用いて仮着型接着層とのラミネート体からなるダイボンド用シートを得た。

【0022】実施例3

ポリエーテルイミドに代えてポリスルホンを用いたほかは実施例1に準じ、ベースフィルム層を形成してそれを用いて仮着型接着層とのラミネート体からなるダイボンド用シートを得た。

【0023】実施例4

ポリエーテルイミドに代えてフェノキシ樹脂を、溶剤にメチルエチルケトンを用いたほかは実施例1に準じ、ベースフィルム層を形成してそれを用いて仮着型接着層とのラミネート体からなるダイボンド用シートを得た。

【0024】実施例5

ポリエーテルイミドに代えて可溶性ポリアミドを、溶剤にクロロホルム／メタノールを用いたほかは実施例1に準じ、ベースフィルム層を形成してそれを用いて仮着型接着層とのラミネート体からなるダイボンド用シートを得た。

【0025】前記の実施例1～5で得たダイボンド用シートを5mm角に切断後、それを仮着型接着層を介して、42アロイ／銀メッキされたQFP（パッド6×6mm）リードフレーム（10連）に常温で仮接着し、そのリードフレーム100枚を積み重ねて常温で24時間放置後、各リードフレームを1枚ずつ採取したが、その際に各リードフレーム間の融着、ないし接着は認められず、各リードフレームを1枚ずつスムーズに採取することができた。

【0026】次に、採取した各リードフレームに、そのダイボンド用シートの切断片を介して5mm角の半導体チップを200℃で接着後、200℃で30分間加熱して硬化させ、固着処理した。この処理により各リードフレームに固着された半導体チップのそれぞれは、いずれの場合にも200℃下、2kg以上の剪断接着力を示し、その充分な耐熱接着力に基づいて後続のワイヤーボンディング工程、パッケージ工程等においても半導体チップの剥離等のトラブルを生じなかった。

【0027】

【発明の効果】本発明によれば、シート方式に基づいて

電極部材の上に厚さや形状等の均一性に優れる接着剤層を容易に付与でき、かつ常温等の低温で固定できて品質の維持性に優れている。また、その接着剤層の固定状態下に電極部材を積み重ねて常温等で保管しても接着剤層が移着せず、電極部材間の接着も生じずに各電極部材を容易に個別採取することができる。さらに、高温・高圧を要することなく半導体チップを固着処理できて、後続のワイヤーボンディング接続や樹脂モールド封止等に耐える耐熱性を有している。

【図面の簡単な説明】

【図1】実施例の断面図。

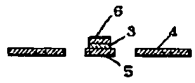
【図2】半導体チップを固着した状態の説明断面図。

【符号の説明】

3：ダイボンド用シート
1：ベースとなるフィルム
2：仮着型接着層
4：リードフレーム
5：ダイパッド
6：半導体チップ

【図1】

【図2】



PTO 03-811 HAMT

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SHEET FOR DIE BOND

[ダイボンド用シート]

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UNITED STATES PATENT AND TRADEMARK OFFICE
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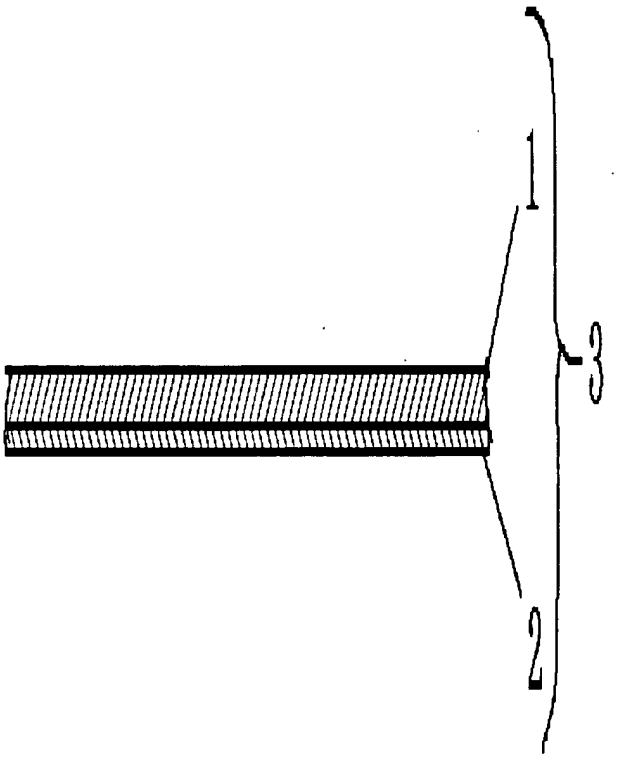
(57) [Abstract]

[Objective]

Thermosetting seat for die bond is obtained wherein, while satisfying the sheet system which can provide adhesive layer which is superior in the uniformity in thickness and shapes, it possesses strength which does not interfere with handling, and in the low temperature such as ambient temperature, it can lock in electrode component and it can evade the quality deterioration by advancing such as changing to B stage by heat treatment, and when electrode component is accumulated under fixed condition of adhesive layer, and kept in the ambient temperature, etc, it does not cause the transfer problem and gluing problem between electrode component, and it enables fastening processing of semi conductor chips without high temperature and high pressure, and it shows heat resistance which withstands wire bonding connection etc.

[Construction]

It is the sheet for die bond wherein it consists of thermoplastic resin with the glass transition temperature of 80 deg C or greater and polymer alloy type adhesive which has thermosetting resin as component; the temporary adhesion type adhesive layer (2) which consists of thermosetting adhesive which shows the stickiness with temperature of 60 deg C or less sheet is provided.over the film (1) which does not show effective stickiness at the temperature of 60 deg C or less,



[Claim(s)]

[Claim 1]

It is the sheet for die bond with the characteristics wherein it consists of the thermoplastic resin with the glass transition temperature of 80 deg C or greater and polymer alloy type adhesive which has thermosetting resin as component; the temporary adhesion type adhesive layer which consists of thermosetting adhesive which shows the stickiness with temperature of 60 deg C or less sheet is provided over the film (1) which does not show effective stickiness at the temperature of 60 deg C or less.

[Claim 2]

It is the die bond described in claim 1 which has electrical conductivity.

[Description of the Invention]

[0001]

[Field of Industrial Application]

This invention relates to die bond sheet in order to fasten semiconductor chip on electrode component.

[0002]

[Prior Art]

Until recently, in production process of semiconductor device, silver paste or other paste was used for fixation of the semiconductor chip to electrode components such as lead frame and stem etc.

As to fastening processing, paste is applied on the lead frame such as die pad, and the semiconductor chip is installed on it, and then, paste layer is hardened.

[0003]

But, due to the paste viscosity fluctuation, or deterioration, dispersion of application amount, or application shapes etc are large, and paste thickness formed is non-uniform, reliability of bonding strength of semi-conductor was poor which posed the points of problem .

Another word, due to the shortage of past coating, if the bonding strength of the semiconductor chip and electrode component is low, it causes the problem wherein semiconductor chip peels off at the succeeding wire bonding step, on the contrary, if the coated amount of paste is too much, paste flows out over the semiconductor chip, it generates characteristic deficiency, yield and reliability decreases, hence, this problem has become especially marked ones attendant upon scaling-up of the semiconductor chip.

Because of that, it is necessary to control paste coating amount frequently, thus it has become a problem which interferes with workability and the productivity.

[0004]

[Problems to be Solved by the Invention]

In this invention, the topic is to develop die bond adhesive sheet wherein in view of the fact that, according to the adhesive sheet, superior adhesive layer with the uniform thickness over the electrode components can be provided over the electrode component and the above mentioned problem can be overcome, while satisfying the adhesive sheet system, it possesses strength which does not interfere with handling, and in the low temperature such as ambient temperature, it can lock in electrode component and at the same time when electrode component is accumulated under its fixed condition of adhesive layer, and kept in the ambient temperature, etc, it neither transfers and nor glues on, and it enables fastening processing of semi conductor chips without high temperature and high pressure, and it shows heat resistance which withstands the succeeding wire bonding connection

and resin molding sealing etc.

[0005]

[Means to Solve the Problems]

It is die bond sheet with the characteristics wherein it consists of the thermoplastic resin with the glass transition temperature of 80 deg C or greater and polymer alloy type adhesive which has thermosetting resin as component and, the temporary adhesion type adhesive layer which consists of thermosetting adhesive which shows the stickiness with temperature of 60 deg C or less sheet is provided over the film which does not show effective stickiness at the temperature of 60 deg C or less.

[0006]

[Working Principle]

With above-mentioned construction, while satisfying adhesive sheet system which is superior in the uniformity of thickness and shapes, and possessing heat resistance which withstands wire bonding connection and resin mold seal or other treatment, it can make thermosetting adhesive sheet which possesses strength which does not interfere with handling.

Furthermore due to the temporary adhesion type adhesive layer, it can be locked in electrode component in the low temperature of the ambient temperature; it can evade the difficulty of quality control due to the advancing into B condition by heat treatment; when electrode component is accumulated under fixed condition of adhesive layer, and kept in the ambient temperature, etc, it does not cause the transfer problem and gluing problem between electrode component, and it enables fastening of semi conductor chips without high temperature and high pressure, thus enabling obtaining the die bond processing.

[0007]

[Embodied example(s)]

The sheet for die bond of this invention was illustrated in Figure 1.

1 is the film which becomes base (polymer alloy type adhesive), 2 is the temporary adhesion type adhesive layer.

In Figure 1, an elongated body was shown, but when it is applied to lead frame and stem or other electrode component, it is formed in a predetermined dimension or shape which corresponds to the semi conductor chips, for instance, by cutting off the elongated body as shown in the illustration

[0008]

The film which becomes base is formed such that using the thermoplastic resin of glass transfer temperature of 80 deg C or greater and polymer alloy type adhesive which has thermosetting resin as the

component, it does not show effective stickiness at the temperature of 60 deg C or less.

Film thickness 1 - 100μ m is common, but it is not limited to this.

[0009]

as thermoplastic resin of the glass transition temperature 80 deg C or greater that is used for manufacturing the aforementioned polymer alloy type adhesive, you can list for example polyimide resin、 polysulfone type resin、 polyether sulfone resin、 phenoxy type resin、 polyamide resin、 acrylic resin etc.

[0010]

On one hand, you can list for example epoxy resin、 phenolic resin、 maleimide resin、 silicone resin etc as thermosetting resin.

The proportion of thermosetting resin is decided appropriately according to heat resistance and strength etc which are required, but generally it is thermoplastic resin per 100 parts by weigh versus 10~500 parts by weight

[0011]

Regarding the sheet for die bond of this invention, over the film (1) which becomes the base which was described before, is provided the temporary adhesion type adhesive layer (2) which consists of thermosetting adhesive which shows stickiness at temperature of 60 deg C or less.

The thickness of temporary adhesion type adhesive layer is 1 - 100μ m in general, but it is not limited to this.

[0012]

Regarding forming the temporary adhesion type adhesive layer , it can be done by the system which uses thermosetting resin such as epoxy resin、 phenolic resin、 polyimide resin、 maleimide resin、 silicone resin as B stage condition, or by the system where sticky substance which introduces the functional group for cross linking like carboxyl group and hydroxyl group into thermosetting resin、 and stickiness adhesive which combines cross linking agent according to the need are used.

[0013]

As the aforementioned adhesive substance, there are adhesive forming polymer、 rosin type resin like, for instance, NBR and acrylic polymer and stickiness-providing resin etc like terpene resin.

Furthermore, it is semi-cured into B stage condition according to the

need, even regarding the system which uses stickiness adhesive.

[0014]

Regarding the sheet for die bond of this invention, in the film which becomes base and/or temporary adhesion type adhesive layer, the powder which consists of electrically conductive substance like for example aluminum、 copper、 silver、 gold、 palladium、 carbon can be contained, thus providing electrical conductivity and raising thermal conductivity.

Thermal conductivity can be improved by containing powders such as , for example alumina、 silica、 silicon nitride

[0015]

Fastening processing of semiconductor chip making use of sheet for die bond of this invention can be done as follows, for example.

That is, while supplying die bond sheet as the ribbon which is wound in reels as in a long ruler condition, it is cut off in sequential predetermined dimension (length and shape etc) through an appropriate cutter.

By this, through cut fragment, adhesive layer which is superior in thickness and a fixed quantity can be formed.

[0016]

Next, the cut fragment which was formed is adhered temporarily over die pad of for instance lead frame that is the electrode component , through temporary adhesion type adhesive layer (2) and semi-conductor chips are placed over it, and it is heated to the temperature higher than the softening point of thermoplastic resin in polymer alloy type adhesive, and it is glued under melting of cut fragment.

It is possible to do heat treatment by, for example, heater、 ultrasound、 ultraviolet light or other appropriate system.

Furthermore, regarding the cut fragment which achieves welding described above, semi-conductor chip becomes fixed in electrode component through solidification of thermoplastic resin by heat treatment and after that, hardening thermosetting resin by cooling.

[0017]

Semi-conductor chip which becomes fixed on lead frame were illustrated in Figure 2.

3 is die bond sheet or its cut fragment、 4 is lead frame、 5 is die pad、 6 is the semiconductor chip.

Furthermore semiconductor chip (6) which becomes fixed in electrode

component is supplied to the succeeding step such as wire bonding treatment and resin mold according to need.

[0018]

Embodied example 1

dimethylacetamide solution which was made by the combination of weight ratio of100/50/30/0.5 of polyetherimide/bisphenol A type epoxy resin (epoxy equivalent 185) /novolac type phenolic resin (softening point 75 deg C) / combining 2 -methyl imidazole is applied over the separator which consists of polyester film and is heated for 10 min under decreased pressure of 0.5 mmHg at 130 deg C and formed base film layer of thickness 20μ m.

[0019]

The other side is that methylethyl ketone solution which is combined with weight ratio of 100/60/30/1 of carboxyl modification NBR/bisphenol A type epoxy resin (epoxy equivalent 450) /novolac type phenolic resin (softening point 75 deg C) /2 -methyl imidazole is coated over the separator which consists of polyester film which was treated by stripping agent, is heated for 10 minutes at 100 deg C , 10μm thick of temporary adhesion type adhesive layer is formed.

[0020]

Next, both components which is acquired as described above, is pressure-bonded through base film layer and temporary adhesion type adhesive layer, the separator of both sides is stripped and retransferred from laminate which was formed, thus acquiring the sheet for die bond.

[0021]

Embodied example 2

Other than using polyether sulfone that replaces polyetherimidem, according to embodied example 1, base film layer is formed and using it, the sheet for die bond which consists of laminate of temporary adhesion type adhesive layer is acquired.

[0022]

Embodied example 3

Other than using polyether sulfone which replaces polyetherimide, according to embodied example 1, base film layer is formed and using it, the sheet for die bond which consists of laminate of temporary adhesion type adhesive layer is acquired.

[0023]

Embodied example 4

other than using phenoxy resin which replaces polyetherimide, and methylethyl keton for solvent, according to the embodied example 1,

base film layer is formed and using it, the sheet for die bond which consists of laminate of temporary adhesion type adhesive layer is acquired.

[0024]

Embodied example 5

Other than using soluble polyamide which replaces polyetherimide, and chloroform/methanol for solvent, according to embodied example 1, base film layer is formed and using it, the sheet for die bond which consists of laminate of temporary adhesion type adhesive layer is acquired.

[0025]

after cutting off the die bond sheet into 5 mm square that was obtained in the aforementioned embodied cases 1~5, it is, in the ambient temperature, temporarily adhered to QFP (pad 6 X 6 mm) lead frame (10 reams) that was plated with 42 alloy/silver, via temporary adhesion type adhesive layer, then, 100 pieces of the lead frame are stacked up and are left alone for 24 hours, then, each lead frame is recovered one layer at a time, but it could not recognize melt adhesion、or gluing between each lead frame at the time, thus smoothly recovering each lead frame one layer at a time was enabled.

[0026]

Next, via the cut fragment of sheet for die bond, semiconductor chip of 5 mm square at 200 deg C is glued on each lead frame which was recovered, then, it is heated at 200 deg C for 30 min and hardened, then, fastened.

Each one of semiconductor chip which becomes fixed in each lead frame by this treatment, each case showed shear adhesion strength of 2 kg or greater under 200 deg C, did not cause exfoliation or other trouble of semiconductor chip regarding the succeeding wire bonding step on basis of satisfactory heat-resistant adhesive strength. and package step etc

[0027]

[Effects of the Invention]

According to this invention, based on the sheet system, it can easily provide adhesive layer on electrode component which is superior in uniformity of thickness and shapes etc on basis of sheet system easily, at same time it can lock in the low temperature such as ambient temperature and is superior in maintainability of quality.

In addition, even when electrode component are accumulated under fixed condition of the adhesive layer, adhesive layer does not transfer, gluing between electrode component does not occur, each electrode component can be recovered easily individually.

Furthermore, it can fasten semi-conductor without requiring high temperature, high pressure, and possesses heat resistance which can withstand succeeding wire bonding connection and resin mold seal

[Brief Explanation of the Drawing(s)]

[Figure 1]

Cross sectional view of an embodied example

[Figure 2]

An explanatory cross section of a condition which fixes the semiconductor chip

[Explanation of Symbols in Drawings]

1

film which becomes base

2

temporary adhesion type adhesive layer

3

sheet for die bond

4

lead frame

5

die pad

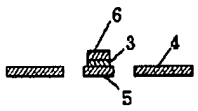
6

semiconductor chip

Drawings

[Figure 1]

[Figure 2]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